

Appln. No. 10/009,504

Attorney Docket No. 10541-824

II. Remarks

Claims 1-13 and 15-24 stand rejected. Claims 1, 5, 13, and 17 are being amended. Accordingly, after entering this amendment, claims 1-13 and 15-24 remain pending.

Reconsideration and re-examination of this application in view of the above amendments and the following remarks are respectfully requested.

Claim Rejections – 35 U.S.C. § 112

Claims 1-13 and 15-24 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite. In response, the claims have been amended to specifically direct the invention to a heat exchanger for a motor vehicle radiator. The heat exchanger conveys commonly known radiator coolants to exchange heat. These radiator coolants have known densities that flow through the radiators at known velocities at typical operating temperatures of motor vehicles. Specifically, the heat exchanger includes one or more tubes with opposing walls with internal projections. The projections extend into the internal cross-sectional area of the tube to divert the flow of radiator coolant to enhance heat exchange from the radiator coolant and to promote laminar flow of the radiator coolant before the radiator coolant encounters subsequent projections.

Accordingly, it is believed that this rejection is now moot and should be withdrawn.

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Claim Rejections – 35 U.S.C. § 102 and 103

Claims 1-5, 9, 12, 13, 15-17, 21, and 24 have been rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Kiser. Claims 6-8, 10, 11, 18-20, 22, and 23 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the combined teachings of Kiser and U.S. Patent No. 4,470,452 to Rhodes.

Kiser discusses a flattened cooling tube for heat exchangers. The tube has internal opposing walls provided with inwardly projecting dimples. The size, shape and arrangement of the dimples promote turbulent flow of the coolant through the tube. Specifically, Kiser states that the purpose of the dimples is to enhance heat transfer from the coolant in the tube by causing "a turbulent fluid flow within the tube." (See, e.g., column 4, lines 57-58.) Specifically, Kiser's dimples amplify the disturbances in the flow of coolant to ensure that the inertia forces in the flow are destabilizing so that the turbulent flow in Kiser's tube is self sustaining and never dies out.

In contrast, Applicant's invention, as recited in amended claims 1 and 13, is directed to a motor vehicle radiator heat exchanger with one or more tubes having projections that divert radiator coolant to enhance heat exchange from the fluid and to promote laminar flow of the radiator coolant before the coolant encounters subsequent projections. Thus, in Applicant's invention, the viscous forces in the flow of commonly know radiator coolants restore laminar flow after the radiator coolant is diverted around the projections.

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Thus, Kiser does not teach each and every limitation of amended claims 1 and 13. Accordingly, reconsideration and withdrawal of the rejections of claims 1 and 13 under 35 § 102(b) are respectfully requested.

Indeed, Kiser fails to appreciate the advantages of maintaining substantially laminar flow in the tube. Absent an appreciation of these advantages, there is no suggestion of a motor vehicle radiator heat exchanger tube with projections that extend into the cross-sectional area of the tube to divert radiator coolant along the tube to enhance heat exchange from the radiator coolant and to promote laminar flow of the radiator coolant before the radiator coolant encounters subsequent projections, as required by amended claims 1 and 13.

Thus, Kiser cannot render Applicant's invention, as claimed in amended claims 1 and 13, as obvious. Accordingly, reconsideration and withdrawal of the rejections of claims 1 and 13 under 35 § 103(a) are respectfully requested.

Since Rhodes does not cure the deficiencies of Kiser and claims 2-12 and 15-24 depend from either claims 1 or 13, directly or indirectly, the reasons for allowance of claims 1 and 13 apply as well to the dependent claims.

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III. Conclusion

In view of the preceding amendments and remarks, it is respectfully requested that all of the pending claims (claims 1-13 and 15-24) are in condition for allowance. Such action is respectfully requested.

Respectfully submitted,

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